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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/516,408	12/02/2004	Hiroshi Sekiguchi	123752	2835

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EXAMINER

DO, ROBERT C

ART UNIT	PAPER NUMBER
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2851

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/516,408

Applicant(s)

SEKIGUCHI ET AL.

Examiner

Robert C. Do

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 1/31/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Arguments

1. Applicant's arguments with respect to claims 1-13 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 4, 6, 7, 9 –15, and 17 – 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee (US 5,768,014) in view of Suzuki et al. (US 6,726,859) and Goto et al. (Japanese Publication Number 2003-050307).

3. Regarding Claim 1, Lee discloses a flat base part (Fig. 6, 30); a plurality of prisms formed on an entrance surface of the base part (30a), each of the prisms having a refraction facet that refracts light rays fallen thereon and; a plurality of V grooves (36a) formed in an exit surface of the base part; and a plurality of wedge-shaped light absorbing parts (36) embedded in the V grooves, respectively, the light absorbing parts (36) having a refractive index lower (Column 4, line 13 shows an equation showing the relationship between the refractive index of the light absorbing part and Fig. 6 show that the light refracting off the light absorbing parts) than that of the base part (30); wherein at least some of the light rays refracted (See light rays of Fig. 6 refracted) are interfaces between the base part (30) and the light absorbing parts (36) embedded in the grooves

(36a) of the base part (30), so that light rays travel outside through regions of the exit surface of the base part the regions being placed between adjacent light absorbing parts, (See Fig. 6) and wherein two inclined surfaces of each of the light absorbing parts are symmetrical with respect to a direction perpendicular to the base part. (See Fig. 6 showing left side of light absorbing 36a symmetrical with the next light absorbing surface to the left)

Lee does not disclose a total-reflection facet that totally reflects light rays fallen thereon and light rays totally reflected by prisms.

However Suzuki et al. discloses a total-reflection facet (Fig. 5A, Top of prism) that totally reflects light rays fallen thereon and light rays totally reflected by prisms (See Fig. 5A).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the prisms of Suzuki et al. in place of the prisms of Lee for the purpose of suppressing the flectivity of the Fresnel lens for the thus making the Fresnel lens of have a higher transmissivity. (Column 8, lines 3 – 11)

Lee also does not disclose a condition expressed by: $\tan^{-1} (2D/W_1) \geq \sin^{-1} (N_1/N_2)$.

However, Goto et al. discloses a condition expressed by: $\tan^{-1} (2D/W_1) \geq \sin^{-1} (N_1/N_2)$ (In the Japanese application it is shown that $.23 < N_1/N_2 < .996$ and Lee teaches in table 1 that a depth of .520mm with and angle of 30° will give us a W_1 of .6. So the \tan^{-1} of $(2D/W_1)$ is equal to 66.5. So if (N_1/N_2) is .5, the $\sin^{-1} (.5)$ is equal to 30. Therefore it is shown $66.5 \geq 30$ meeting the claimed expression.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use values of N_1 and N_2 as taught by Goto for the Fresnel lens sheet of Lee for optimizing the diffusion characteristics and thus contrast reduction is suppressed.

4. Regarding Claim 4, Lee discloses a flat base part (Fig. 6, 30); a plurality of prisms formed on an entrance surface of the base part (30a), each of the prisms having a refraction facet that refracts light rays fallen thereon and; a plurality of V grooves (36a) formed in an exit surface of the base part; and a plurality of wedge-shaped light absorbing parts (36) embedded in the V grooves, respectively, the light absorbing parts (36) having a refractive index lower (Column 4, line 13 shows an equation showing the relationship between the refractive index of the light absorbing part and Fig. 6 show that the light refracting off the light absorbing parts) than that of the base part (30); wherein at least some of the light rays refracted (See light rays of Fig. 6 refracted) are interfaces between the base part (30) and the light absorbing parts (36) embedded in the grooves (36a) of the base part (30), so that light rays travel outside through regions of the exit surface of the base part the regions being placed between adjacent light absorbing parts, (See Fig. 6) and wherein two inclined surfaces of each of the light absorbing parts are symmetrical with respect to a direction perpendicular to the base part. (See Fig. 6 showing left side of light absorbing 36a symmetrical with the next light absorbing surface to the left)

Lee does not disclose a total-reflection facet that totally reflects light rays fallen thereon and light rays totally reflected by prisms.

However Suzuki et al. discloses a total-reflection facet (Fig. 5A, Top of prism) that totally reflects light rays fallen thereon and light rays totally reflected by prisms (See Fig. 5A).

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the prisms of Suzuki et al. in place of the prisms of Lee for the purpose of suppressing the flectivity of the Fresnel lens for the thus making the Fresnel lens of have a higher transmissivity. (Column 8, lines 3 – 11)

Lee also does not disclose a condition expressed by: Conditions expressed by: $\tan^{-1} (D/W_3) \geq \sin^{-1} (N_1/N_2)$ and $\tan^{-1} (D/W_4) \geq \sin^{-1} (N_1/N_2)$.

However, Goto et al. discloses a condition expressed by: $\tan^{-1} (D/W_3) \geq \sin^{-1} (N_1/N_2)$ (In the Japanese application it is shown that $.23 < N_1/N_2 < .996$ and Lee teaches in table 1 that a Depth of .520mm with and angle of 30° will give us a W_1 of .6. So the \tan^{-1} of (D/ W_1) is equal to 48.9. So if (N_1/N_2) is .5, the $\sin^{-1} (.5)$ is equal to 30. Therefore it is shown $48.9 \geq 30$ meeting the claimed expression.) and a condition expressed by: $\tan^{-1} (D/W_4) \geq \sin^{-1} (N_1/N_2)$ (In the Japanese application it is shown that $.23 < N_1/N_2 < .996$ and Lee teaches in table 1 that a Depth of .520mm with and angle of 30° will give us a W_1 of .6. So the \tan^{-1} of (D/ W_1) is equal to 48.9. So if (N_1/N_2) is .5, the $\sin^{-1} (.5)$ is equal to 30. Therefore it is shown $48.9 \geq 30$ meeting the claimed expression.)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use values of N_1 and N_2 as taught by Goto for the

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Fresnel lens sheet of Lee for optimizing the diffusion characteristics and thus contrast reduction is suppressed.

5. Regarding Claims 6 and 7, and 14 and 15, Lee discloses all the claimed invention except for light absorbing parts that have a uniform absorptance and an optical density per 1 μm in thickness of the light absorbing parts is in a range of .1 to 1.2

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make the light absorbing parts of Lee have a uniform absorptance and an optical density per 1 μm in thickness of the light absorbing parts is in a range of .1 to 1.2 for the purpose of utilizing an optimum absorption range while minimizing material costs. The applicant should note that it has been held that where the general working conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

6. Regarding Claims 9, 11, 17, and 19 Lee discloses an anti-reflection layer formed on either entrance surface of the Fresnel lens sheet or the exit surface (column 4, lines 20-25).

7. Regarding Claims 10 and 18, Lee discloses a lenticular sheet placed on a viewer's side of the Fresnel lens sheet to diffuse light passed through the Fresnel lens sheet (column 2, lines 15-20).

8. Regarding Claims 12, 13, 20 and 21, Lee discloses a projector that projects an image light rays obliquely onto the rear projection screen (column 2 lines 22-27).

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9. Claims 3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee and Suzuki et al. and Goto et al in view of Wolf (U.S. Patent Number 6,700,713).

10. Regarding Claim 3, Lee and Suzuki et al. and Goto et al. teach all of the claimed elements shown above.

Lee does not teach the following the Fresnel lens sheet where a ratio of W_1/D is in the range of .05 to .5.

However Wolfe teaches the Fresnel lens sheet where a ratio of W_1/D is in the range of .05 to .5 (Lee teaches of an expression $W_1 = 2D \tan \theta$. Wolfe teaches that incident angles up to 35 degrees are projected onto the screen. (Column 3, lines 36-40) So using this equation from Lee we can pick a Depth, D, of .5, and choose an angle, θ , of 10° (Wolfe teaches of incident angles up to 35 degrees) we get a Width, W_1 , of .08. Using the numbers found the ratio of W_1/D is equal to .17 is within the claimed range of .05 to .5)

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use incident angles as taught by Wolfe in the equation of Lee in order to find a desired width so as to provide the lens that collimates projected images over a wide range of dimensions of display screens for viewing the projected imaged, and further saving cost to accommodate a wide range of screen sizes.

11. Regarding Claim 5, Lee and Suzuki et al. and Goto et al. teach all of the claimed elements shown above.

Lee and Suzuki et al. and Goto et al. do not teach the Fresnel lens sheet where a ratio of W_3/D is in a range of .025 to .25.

However Wolfe teaches the Fresnel lens sheet where a ratio of W_3/D is in a range of .025 to .25. (Lee teaches of an expression $W_1 = 2D \tan \theta$. Wolfe teaches that incident angles up to 35 degrees are projected onto the screen. (Column 3, lines 36-40) So using this equation from Lee we can pick a Depth, D, of .5, and choose an angle, θ , of 10° (Wolfe teaches of incident angles up to 35 degrees) we get a Width, W_3 , of .08. Using the numbers found the ratio of W_3/D is equal to .17 is within the claimed range of .025 to .25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use incident angles as taught by Wolfe in the equation of Lee in order to find a desired width so as to provide the lens that collimates projected images over a wide range of dimensions of display screens for viewing the projected imaged, and further saving cost to accommodate a wide range of screen sizes.

12. Claims 8 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee and Suzuki et al. and Goto et al. in view of Goto (U.S. Patent Number 6,822,792).

Regarding Claim 8 and 16, Lee and Suzuki et al. and Goto et al.'s teachings have been disclosed above.

Lee and Suzuki et al. and Goto et al. do not disclose, wherein the light absorbing parts are formed of a material prepared by dispersing spherical light absorbing particles in a transparent base material, and a mean particle size of the spherical light absorbing particles is in a range of 2 to 15 μm .

However, Goto et al. discloses wherein the light absorbing parts are formed of a material prepared by dispersing spherical light absorbing particles (Fig. 11, 105) in a transparent base material (102), and a mean particle size of the spherical light absorbing particles is in a range of 2 to 15 μm . (Column 40, lines 30 – 32)

Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use light absorbing particles of Goto et al. as the absorbing material in the screen of Lee for the purpose of absorbing stray light so that there will be uniform brightness on the screen.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert C. Do whose telephone number is (571)272-1387. The examiner can normally be reached on Monday Through Friday, 8am - 4:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diane Lee can be reached on (571)272-2399. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

RCD

Rodney Fuller
Primary Examiner

A handwritten signature in black ink, appearing to be 'R. Fuller', written over the printed name of the Primary Examiner.